State of California
Department of Food and Agriculture
Division of Measurement Standards

Certificate Number: 4585(b)-01

California Type Evaluation Program
Certificate of Approval
for Weighing Devices

For:

Indicating Element
Digital Electronic
Models: 77X and 77XS*
n_{max}: 10 000

Accuracy Class: III/III L

Submitted by:

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Standard Features and Options

* "S" suffix designates NEMA 4X enclosure
"X" suffix = 8 for dot matrix graphic alphanumeric display and 14-key keyboard
= 7 for LCD 4-line dot matrix display and 55-key keyboard

Semi-automatic tare (push-button) (778/S only)
AC power supply
Pound/kilogram conversion (unit key)
Keyboard tare
RS232 interface (Comm 1)
Time and date display
Identification capability
Semi-automatic zero setting mechanism (push-button)
Automatic zero setting mechanism
Gross/tare/net weight calculations
Category 1 physical security seal
101 key PC keyboard interface
Weigh-in/weigh-out capability
Combined RS232 and RS485 interface (Comm 2)

Options:

Automatic multi-interval
Stored tare capability
Fill control
Multiple scale operation (up to seven scale input boards)

Temperature Range: -10 °C to 40 °C (14 °F to 104 °F)

These devices were evaluated under the California Type Evaluation Program (CTEP) and were found to comply with the applicable technical requirements of California Code of Regulations for "Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: October 10, 2001

Mike Cleary, Director

Cardinal Scale Manufacturing Co.
Indicating Element
Models: 77X and 77XS

Application: General purpose indicating element for use with a compatible and certified weighing element.

Identification: The identification badge is located on the rear of the weight display housing and can be viewed by rotating the indicator on its desktop stand or wall-mounted bracket. The identification badge on the NEMA 4X enclosure may be located on the front or side.

Sealing: Access to the set-up/calibration switch is secured with a wire security seal threaded through two drilled head screws. A set-up/calibration switch is located on each installed scale input board above the scale connector on the rear of the weight display housing. On the NEMA 4X enclosure, a wire security seal can be threaded through the clamping screw and a hole on the front cover lip.

An application program can only be downloaded to the indicator when the set-up/calibration switch is activated.

Operation: The Cardinal 77X and 77XS are programmable indicators. Before applying a security seal, it should be verified that a user application program is not affecting the metrological integrity of the indicator. The following procedure will verify integrity of the indicator.

1. Apply a known weight to the weighing element and annotate the indication. Remove the weight.
2. Turn off the indicator. Wait a few seconds then turn on the indicator.
3. When the start menu screen is displayed, press the **STD** key to activate the standard program.
4. Reapply the same weight to the weighing element. If the indication is the same as that in step 1, the application program is not affecting the integrity of the indicator.
5. Repeat step 2. When the start menu screen is displayed, press the **APP** key to return to the user application program.

Once the calibration switch is deactivated the indicator may be sealed.

Test Conditions: This certificate supersedes Certificate of Approval Number 4585(a)-99 and is issued to include the LCD 4-line graphic dot matrix display and 55-key keyboard. A Model 777 was submitted for this evaluation. The emphasis of this evaluation was on device design, operation, marking requirements, and print format. Several increasing/decreasing tests were conducted with a supply voltage of 100 VAC to 130 VAC. The previous test conditions are repeated below.

Certificate of Approval Number 4585(a)-99: This certificate supersedes Certificate of Approval Number 4585-97 and was issued to include the multi-interval, stored tare, and fill control options. Model 778 was submitted for this evaluation. The indicator was interfaced to a load cell simulator and a printer. The emphasis of the evaluation was on device design, operation, marking requirements, and print format. Several weigh-in/weigh-out, increasing/decreasing loads, and stored tare transactions were examined.

Certificate of Approval Number 4585-97: Model 778 was submitted for evaluation. The emphasis of the evaluation was on device design, operation, and compliance with influence factor requirements. The indicator was interfaced to a weighing platform and a printer for discrimination, power interruption, zero tests, and print format. The unit was tested for accuracy over a temperature range of –10 °C to 40 °C. Additionally, the device was tested with a supply voltage of 110 VAC to 130 VAC.

Results of the evaluation indicate the devices comply with applicable requirements.

Type Evaluation Criteria Used: Title 4, California Code of Regulations, 2001 Edition

Tested By: Sam Boyd (CA) 4585(b)-01; Sam Chan (CA) 4585(a)-99, 4585-97